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THE GREAT BARRIER REEF OF AUSTRALIA.

THE Great Barrier Coral Reef of Australia, the marvellous structure and extent of which were first made known through the explorations of Captain Cook, is one of the wonders of the universe. Its linear measurement is no less than 1250 miles, beginning with its northern origin in Torres Straits, about $9\frac{1}{2}^{\circ}$ south latitude, in close proximity to New Guinea, and thence stretching away as far as Lady Elliot Island, the northernmost true coral islet in the system, situated in the parallel of 24° , somewhat south of the bold mainland promontory known as Bustard Head. Its entire area lies within the territorial jurisdiction of Queensland, of which colony it constitutes one of the most valuable possessions.

Some idea of the monetary importance to Queensland of this great reef may be gained from the fact that raw material from it to the value of over £100,000 is annually obtained and exported from the colony. In the opinion of Mr. Saville Kent, who has lately published a splendidly illustrated quarto volume dealing with this great reef and its products,* this sum probably represents but a fractional part of what it will be worth when the prolific resources of the region have been fully developed. The

* 'The Great Barrier Reef of Australia; its products and potentialities.' By W. Saville Kent, F.L.S., F.Z.S., Commissioner of Fisheries to the Government of West Australia, and late of Tasmania and Queensland. 4to, pp. 387. With 48 photographs and 16 chromo-lithographs. London W. H. Allen & Co. 1893.

items which have contributed in the past, and are likely to contribute in the future, most extensively towards the production of the large income referred to, are the pearl, pearl-shell, and trepang (or *Bêche-de-mer*) fisheries. These, says Mr. Saville Kent, are capable of development to an almost unlimited extent, and, in addition, there are other fishing and allied industries which await but the advent of scientifically applied labour, and the necessary capital, to yield a rich increase to the colony's wealth.

To judge by the information afforded by the volume before us, with its beautifully executed photographs and coloured plates of corals, mother-of-pearl shells, oyster reefs, holothurians, anemones, and fishes of the most fantastic shapes and brilliant colours, Mr. Saville Kent's estimate seems by no means exaggerated. On the contrary, there would seem to be in this great reef a wealth of natural marine productions which, looking to the extensive area and to the process of recuperation which is constantly going on, must be practically inexhaustible. Under these circumstances it is perhaps surprising that no enthusiastic naturalist has until now been found to give some detailed account of these wonderful productions, and attempt with the aid of photography to convey some idea of the remarkable appearance presented by a reef with all its masses of corals and gorgonias, sea-weeds and shells, star-fish and holothurians grouped in endless variety as far as the eye can reach. Indeed it may be said that by no process other than that of photography would it be possible to represent with any degree of accuracy the areas of coral-growths that are uncovered by the sea for such short and uncertain intervals.

Mr. Saville Kent is to be congratulated on the success which has attended his labours, not only in regard to the reproduction of his very beautiful photographs, but in regard also to the valuable information which he has collected in the course of his explorations, and which is now published. His first chapter is devoted to a detailed description of the photo-type plates, which need only be seen to be admired. In the second chapter he deals with the general structure of coral reefs and theories of origin. "The reef-forming corals," he says, "owe their solidity and extensive dimensions to the fact that they represent, for the most part, the united, or, more correctly, imperfectly separated

coral skeletons or 'coralla' of a great number of closely associated sea-anemone-like polyps. The closely aggregated clusters of our commoner British species, such as the strawberry (*Actinia mesembryanthemum*), the daisy (*Sagartia bellis*), and the opelet anemone (*Anthea cereus*), as they repose extended in their beauty in some clear rock pool on, say, the Devonshire, Welsh, or Channel Islands coast, have been a frequent source of admiring wonder. The majority of the clusters have been formed by the repeated subdivision, or technically termed 'fission,' of a single primary anemone or polyp. Supposing that these clustered anemones secreted a calcareous coral basis, and, in place of becoming entirely separated from one another, remained united by their basal, skeleton-secreting tissues, we should have in this hypothetical compound organism a precise presentment of the structural organisation of a typical reef-forming coral."

The highest elevation at which corals are found growing within the Barrier-reef area is that of about ordinary low-water mark. Thence downward to a depth of from twenty to thirty fathoms represents the generally recognised bathymetrical range of reef-coral growth. Their most luxuriant development, however, is limited by a depth of about fifteen fathoms from low-water mark—an area that corresponds essentially with what is known as the Oar-weed or Laminarian zone of European and other temperate seas.

The specific varieties of coral-reefs that receive universal recognition at the hands of biologists are, as originally classified by Mr. Darwin, referred to three distinct categories. These are—(1) Lagoon islands, or Atolls; (2) Barrier- or Encircling-reefs; and (3) Fringing- or Shore-reefs. Dealing with each of these in turn, Mr. Saville Kent proceeds to discuss Mr. Darwin's theories of reef formation, and to compare them with the views of more recent writers on the subject who have been unable to accept them.

Then follows a consideration of the general structure and most probable mode of origin of the Great Barrier Reef of Australia, the most colossal of its kind. This is, naturally, one of the longest chapters in the book, and a very interesting one; inasmuch as the evidence afforded by this great reef is for the first time fairly and fully considered with a view to explain the divergent views held by Mr. Darwin and Dr. John Murray in

their respective theories of origin of coral reefs. The remarks on the evidence which exists of a former connection between New Guinea and North Queensland (pp. 132, 133) are particularly instructive.

In Chapter V. (pp. 139—203) we have a detailed and beautifully illustrated account of corals and coral animals, succeeded by another on pearl and pearl-shell fisheries, the annual value of which is estimated at £70,000. This industry is confined to the tropical area of the Queensland coast-line, or, in other words, is essentially associated with the Great Barrier district. Its headquarters are at Thursday Island, Torres Strait, the northernmost point of the Australian continent. All the licenses for vessels, boats, and men employed in this fishery are taken out at Port Kennedy, Thursday Island; and from this centre shelling expeditions are made along the mainland coast line to the northern limits of the Great Barrier Coral Reef, and throughout Torres Strait northwards to the vicinity of New Guinea. Of late years pearl-shell has been also obtained in some quantity on the east shore of Cape York peninsula in the Gulf of Carpentaria. The average depth of water from which the greater quantity of mother-of-pearl shell is at present collected is seven or eight fathoms. Twenty fathoms represent about the greatest depth from which the shell is profitably fished, although few divers can stand the strain of prolonged work under that pressure. In former years it was abundant, and even now is occasionally obtained, in such shallow water as to be gathered by the hand at low spring tides.

The very best shell fetches from £8 to £9, and the worst about £3 per cwt. The species which bears this commercial value is *Meleagrina margaritifera*, the typical mother-of-pearl and pearl-producing shell of the Indian and Pacific Oceans. Two varieties, the one with a golden edge, the other having a silvery or nacreous consistency throughout, are pretty evenly intermingled, and do not, so far as the author's investigations have extended, present any marked distinction in the aspect or structure of the contained animal. The last-named variety having the nacreous lining, or true mother-of-pearl, pure and uniform throughout, is the more valuable, as it cuts up to greater advantage, and for commercial purposes the purest white shell invariably commands the highest price.

Of the *Bêche-de-Mer* Fisheries, Mr. Saville Kent gives a very interesting account (pp. 225—242), from which we extract the following :—

“ *Bêche-de-mer*, Sea-slugs, Sea-cucumbers, or Trepang, as the reef-frequenting animals dealt with in this chapter are variously designated, represent an ordinal group, that of the *Holothuridæ*, which belongs systematically to the class of the invertebrate sub-kingdom which is distinguished by biologists under the title of the Echinodermata. The term *Bêche-de-mer*, by which the organisms are now most generally known in trade circles, is the French form of the older title of *Bicho-do-mar*, signifying a sea-worm or sea-slug, which was suggestively applied by the older Portuguese navigators to that marine produce which from the earliest times has constituted so important an article of commerce in China and the Malayo-Polynesian region generally, where it is better known under the colloquial title of Trepang. Sea-slugs and Sea-cucumbers are Anglo-Saxon titles, having reference to the general shape of the animals, and they have been applied popularly to various allied species, mostly smaller, and having no commercial value, which are indigenous to British waters.

“ The class Echinodermata includes, in addition to the original group of the *Holothuridæ*, or *Bêche-de-mer*, all the innumerable varieties of Star-fishes and the spine-bearing Sea-urchins or *Echini*. The fundamental structure in each of these orders is identical. This may be most readily understood by an examination of their organs of locomotion, which are found, in each of the allied groups mentioned, to consist of a series of extensile tubular organs, ‘ambulacra,’ which terminate in adhesive suckorial disks, and are not possessed by any other class of the animal kingdom. The representatives of the *Holothuridæ*, or *Bêche-de-mer*, are distinguished from their allies, the Star-fishes and Sea-urchins, by their elongate, somewhat cucumber- or sausage-shaped bodies, which, in all the commercial forms, are capable of great contraction and extension. The mouth, which is situated at one extremity of the body, is surrounded by a series of plumose or tufted tentacles ; a circular or pentagonal aperture at the opposite end is the vent.

“ The food of *Bêche-de-mer* consists chiefly of the microscopic calcareous-shelled animals known as *Foraminifera*, which are swallowed in combination with a large percentage of sand and broken fragments of shells and corals. The process of feeding, as observed by the author in a large number of varieties, is in all cases identical and somewhat remarkable. The tufted, mop-like tentacles are one by one swept over the surface of the ground or reef upon which the animal is feeding, and in corresponding order they are recurved towards the mouth, and thrust with the adherent food-matter down the creature’s throat ; in reverse order they are extended to annex more pabulum.

"The largest-sized commercial *Bêche-de-mer* obtained from Queensland waters is the ordinary 'Prickly-fish' or 'Prickly-red,' *Stichopus variegatus*, which, in its fully-extended state, may measure four feet or more in length, with an accompanying diameter of four or five inches. Eighteen inches is the more ordinary extended length of black, red, and teat-fish. In all instances these organisms are capable of contracting to about one-half of their extended length, the body under contraction becoming of course thicker.

"The process by which *Bêche-de-mer* is prepared for the market in Queensland is as follows:—The 'fish' are first collected in sacks by wading or diving off the reefs during the low spring-tides. They are then, immediately on their arrival at the dépôt, or curing-station, placed in large iron cauldrons, and boiled for twenty minutes. They are next taken out; split up longitudinally with a long, sharp-pointed knife; gutted; and exposed on the ground in the sun until the greater portion of the moisture has evaporated. The largest specimens, such as prickly- and teat-fish, are frequently spread open, so as to dry more readily, with small transversely-inserted wooden splints. The greater amount of moisture having been got rid of, the fish are transferred to the smoke-house. This is usually composed of corrugated iron, ten or twelve feet high, and fitted, in its upper half, with two or three tiers of wire netting, upon which the *Bêche-de-mer* are laid. The wood most in favour for the smoking process is that of the red mangrove, *Rhizophora mucronata*. Twenty-four hours is the usual period for which *Bêche-de-mer* are left in the smoke-house. By the end of that time they have for the most part shrunk to a length of six inches or less, and in aspect they may be likened to charred sausage. They are then ready for bagging up and despatched to the nearest market.

"An essential matter, that demands the most careful attention of those engaged in the *Bêche-de-mer* fishery, is the maintenance of the cured fish in a thoroughly dry condition. The prepared produce readily absorbs moisture; should it get wet, or have been insufficiently cured, it has a tendency to dissolve into a tenacious, glue-like mass of the most repulsive aspect and abominable odour. Properly cured, and maintained in a first-class condition, the dried animals (to use a trade expression) should rattle like walnuts in their bags. To insure their delivery in the Hong Kong market in the same prime condition, the precaution is sometimes taken of transporting them in tin-lined cases.

"The fishery for *Bêche-de-mer* is carried on chiefly by means of small luggers of five or six tons burden. These make daily voyages from the curing-station to the neighbouring reefs, which are exposed only at low water; or a fleet of them may remain in the vicinity of the reefs, one or more acting as tenders to convey the fish to the curing-station and to bring back supplies."

In regard to their annual export value the oyster-fisheries of Queensland occupy the third position upon the list of the leading fishery industries of the colony. "Pearl shell" takes the lead, with an average yearly export value of £70,000. The *Bêche-de-mer* yields in like manner an average of £23,000, while the oyster-fisheries for the past ten years have not exceeded an average of £8000, but almost half as much again may be set down as the value of those for home consumption, bringing the total for oysters to about £12,000.

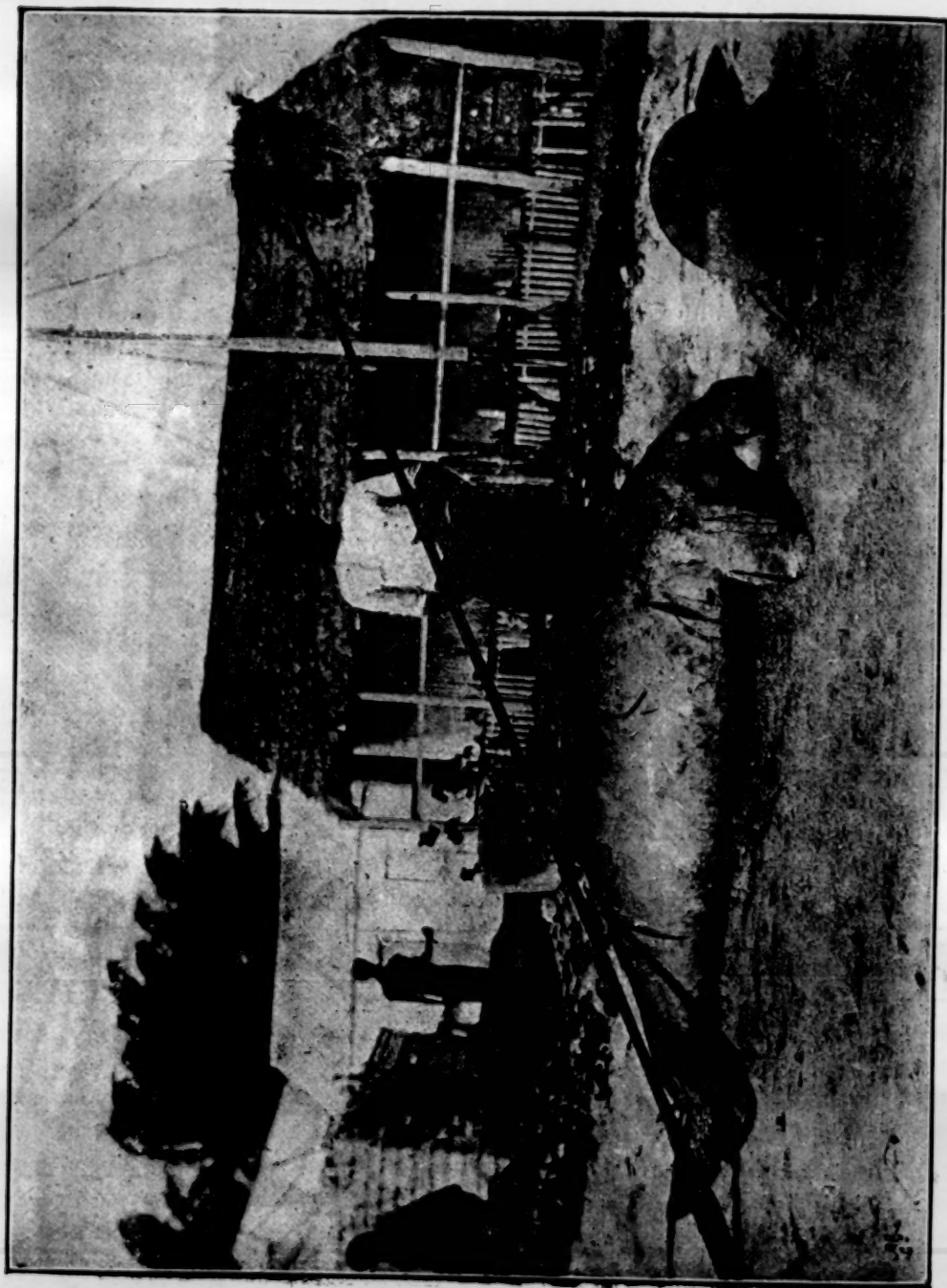
There is but one species of oyster of any commercial value in Queensland, namely, the so-called "rock-oyster," *Ostrea glomerata*; but of this form there are, as might be expected, several varieties, which are duly described.

Mr. Saville Kent states that the largest edible oyster is that known as the cockscomb-oyster, *Ostrea crista-galli*, a salt-water form restricted to the tropics, and found plentifully among the coral reefs of Torres Strait and the Great Barrier system. A pair of its shells will weigh from 5 to 7 lbs., and have a diameter of from 8 to 12 inches.

As to the antagonism of star-fishes and oysters, the author observes —

"Star-fishes of all descriptions, but more especially the ordinary five-rayed varieties, *Asteriadae*, are universally held up for condemnation, as representing the most insatiable foes of the oyster tribe. Whether this wholesale condemnation is a just one, there are some reasons for doubting. In many instances it has been observed that the Star-fishes were merely acting as scavengers, and preying on dead or dying bivalves. The direct experiment was carried out by the author, some years since, in one of the large English public aquaria, of keeping oysters and star-fish, including the accredited most aggressive species, *Asterias (Uraster) rubens*, in the same tank. The pre-supposed aggressors and their helpless victims were thus maintained, side by side, in perfect health, for many months, without a single instance occurring of molestation of the oysters on the part of the Star-fish. The Echinoderms, however, demonstrated their possession of normal healthy appetites by feeding freely on portions of cut-up fish occasionally placed in the tanks. How far this vindication of the Star-fish's character would hold good in association with the common shore species of South Queensland has yet to be demonstrated.

"In the interim it is desirable, in the interests of the oyster grower, to recommend the clearance of this intruder as far as possible from off his beds or banks. In this connection, a suggestion concerning the destruction



NATIVE CHIEF OF JERVIS ISLAND, TORRES STRAIT, AND DUGONG KILLED WITH THE SPEAR.
From a photograph taken by Professor Haddon.

of Star-fish may prove acceptable. It is by no means an uncommon practice among oyster cultivators, on bringing up Star-fish in the dredge, or finding them on the banks, to rip them in pieces and cast them aside, or into the water again, under the impression that their life is destroyed. As a matter of fact, each of the five finger-like processes separated from the Starfish's body is capable of growing into a fresh Star-fish, so that by the process of dismemberment the further multiplication of the species is accomplished. If only the lambs' tails, docked by the Australian pastoralist, could be induced to re-grow the lamb on the same happy principle, millionaire squatters would soon become a drug in the market. To encompass the certain destruction of the Star-fish, it is desirable that they should be carried to land and be deposited above the reach of the tide. They may also be killed immediately by immersion in fresh water.

Queensland possesses a fish-fauna as remarkable for the number of species as for their structural variety. The number authoritatively recorded, including fresh-water as well as marine forms, falls but little short of 900, of which about one-third are edible. Anchovies and herrings abound, and some species of this family (*Clupeidæ*) attain a length of 4 or 5 feet. The reef eels, which are sometimes 20 feet long, are more dreaded by the collectors of *Bêche-de-mer* than even the sharks. As to the introduction of salmon, Mr. Saville Kent is not sanguine; for he regards the failure of the attempts made in this direction as due to temperature which cannot be controlled. Of 35,000 young salmon, hatched and distributed amongst the Australian rivers in 1844, not one is known to have returned from the sea, the reason being that the marine temperature corresponds with that of the coast of Europe which is outside the limits of Atlantic salmon distribution. The experiment has failed in Australia for the same reason that it did in the South of France.

The photographs of Barrier Reef fishes, giving figures of nearly forty species, are excellent.

We are unable to speak so favourably of the chromolithographs, of which there are sixteen; two of Reef fishes, the remainder depicting Anemones, Corals, Echinoderms, *Bêche-de-mer*, and Reef oysters. The drawings are hard and flat, the colouring crude; there is a want of shading necessary to give rotundity of form, and, where two vivid tints meet, there is no gradual blending, no delicate transition such as is observable in Nature. This is a general defect in illustrations similarly

produced; but from what we know of chromo-lithography, we are inclined to think that these plates might have been very much better done.

Among the fisheries of the Great Barrier and Torres Strait districts, those of Turtle and Tortoise-shell are in a comparatively latent condition. The Edible Turtle, *Chelone mydas*, abounds in these waters, and breeds on the sandy shores of the coral islets. Except, however, for local consumption, and the export of a limited number to Sydney and Melbourne, little or nothing is done with this valuable item of commerce. One method of capturing turtle by the natives of Torres Strait, although not described for the first time, is remarkable, and may be new to some of our readers.

The large Sucking-fish, *Echeneis naucrates*, which grows to a length of 3 or 4 feet, and is called by the natives *Japu*, is kept alive at the bottom of a native canoe, a thin line being fastened round its tail and through its gills. On a turtle being sighted near the canoe, the sucking-fish is thrown out towards it, and immediately swims to and fastens upon its carapace. If the turtle be a small one, or of medium size, it is hauled in by the line, the fish retaining its tenacious hold; but if it be a large one, a native jumps overboard with a stronger line, and following the smaller one down secures the turtle.

The trade in tortoise-shell in this part of the world is not sufficient to constitute an independent industry, the greater portion of that which is collected being obtained in a desultory manner by those engaged in the *Bêche-de-mer* trade. Nevertheless the average annual value of the tortoise-shell exported from Queensland within the past ten years has slightly exceeded £400. The most valuable description, procured from the Hawk's-bill Turtle, *Chelone imbricata*, will realise from 20s. to 25s. per lb. The thinner and inferior shell from the Edible Turtle, *Chelone mydas*, will not fetch more than 4s. or 5s. per lb.

We have yet one more subject of interest to notice before closing this sumptuous volume.

A highly characteristic Barrier Reef animal is the Australian Dugong, *Halicore australis*, technically referred to a distinct herbivorous order of the Mammalia known as the *Sirenia*.

The average length of the Dugong when adult is from 8 to 10 feet, though it occasionally reaches 12 feet in length.

It is gregarious in its habits, and is found in herds numbering from ten or a dozen to thirty or forty individuals, mostly females. Its food consists almost exclusively of the *Zostera*-like marine grass, *Posidonia australis*, which grows in great abundance about the reefs of the intertropical coast line.

The chief value of the animal, which is eaten by the natives, depends upon the oil it yields, which, for medicinal purposes, used to realise first hand 20s. per gallon, but which now fetches about 12s. per gallon. It is captured both by netting and spearing. The Dugong spear used in Torres Strait is a formidable weapon, being, as originally described by Prof. A. C. Haddon, a pole from twelve to fifteen or more feet in length, with its butt-end club-shaped and hollowed for the reception of a loose-fitting barbed dart, to which a long line is attached. The opposite end of the shaft is usually perforated, and decorated with tufts of cassowary-feathers, ovula shells, or rattling seed-pods.

Through the kindness of Messrs. W. & H. Allen & Co., the publishers of this work, we are enabled to give a reproduction of an excellent photograph, taken by Prof. Haddon, of a native chief of Jervis Island, Torres Strait, with two Dugongs killed by him with the long spear above described:—

"When close enough," says Prof. Haddon, "the man bearing the spear jumps into the water, at the same time harpooning the Dugong as it is in the act of breathing. The latter immediately dives down, and runs out the rope which is fastened to the dart, the man having to be careful not to get his head entangled in the loops of the rope, as deaths have occurred from this accident. The man returns with the spear-shaft to the canoe. Other men immediately dive into the water, and when the Dugong once more rises to breathe, they tie a second rope round its tail, and then, whenever it attempts to rise, the men by diving at the same time, pull it down with the rope. and in a very short time it is suffocated. Death always occurs through asphyxia."

With this extract we must conclude our notice of this very beautiful and instructive volume. The amount of information which it contains concerning the animal-life to be found on and around the Great Barrier Reef of Australia is considerable, and while, from the style in which it is written, the volume is attractive to the general reader; it furnishes in its systematic and accurate details a very important contribution to zoological science.

THE "RUSSET-PATED CHOUGH" OF SHAKESPEARE.

BY THE EDITOR.

IN a review of 'The Ornithology of Shakespeare' which appeared in 'Nature,' 28th Dec. 1871, the reviewer observed that "Without doubt the poet had in his mind the real Cornish Chough, and the expression is quite accurate. 'Russet-pated' is having red pattes, or feet (*cf.* the heraldic *croix pattée*), not a red pate or head, a feature equally inapplicable to Chough or Daw, while the red feet of the former are as diagnostic as can be."

The late Edward Newman, struck apparently by the ingenuity of this criticism, in an editorial note appended to a review of the same book which appeared in 'The Zoologist' for 1872 (p. 2939), adopted this view as "unquestionably the true explanation." The suggestion had been long previously made by Edward Turner Bennett in 'The Zoological Journal' for 1835 (vol. v. p. 496), and within the last few weeks it has been once more revived (p. 87, note), and approved (p. 132, note), in the first part of Professor Newton's 'Dictionary of Birds,' recently published by Messrs. Black.

Unwilling as I am to differ in opinion from so excellent an authority in matters ornithological, I am so entirely unable to accept this explanation, that I am tempted to try and set down a few reasons for my inability to agree with him.

It will be remembered that the passage occurs in the 'Midsummer Night's Dream' (Act iii. sc. 2), wherein Shakespeare refers to—

"Russet-pated Choughs many in sort,
Rising and cawing at the gun's report."

My contention, in 'The Ornithology of Shakespeare' (pp. 118, 119), was, and still is, that the bird intended by the poet was not the red-legged Chough, but the grey-headed Jackdaw.

In support of this contention, it will be necessary for me to prove (1) that the name *chough* was not exclusively bestowed upon the bird with red bill and red legs, but was also commonly applied to the Jackdaw; (2) that "pated" means "headed," and cannot be read "patted" for "footed"; (3) that "russet" is not red, though it may be "reddish," and is often

used for "gray," the material "cotton russet" being of that colour; and (4) that the habit of the birds referred to by Shakespeare as "many in sort, rising and cawing" indicate a mixed flock of Jackdaws and Rooks, and not Choughs and Rooks: an assemblage of the former kind being commonly observable; of the latter kind never—so far, at least, as my experience goes.

(1) That the word "Chough" was not always intended to refer to the bird with red bill and legs may be inferred from the context in several passages by different writers, a few of whom I will quote. Palsgrave, in his '*Lesclarcissement de la Langue Francoyse*,' 1530, has "Choughe, a yong crowe, *corneille*."

In '*The Churchwardens' Accounts of the Town of Ludlow in Shropshire, from the year 1540 to the end of the reign of Elizabeth*,' printed for the Camden Society, we find the following entries relating to the Chough, by which name the Jackdaw is evidently intended:—

"Item, payd unto Mr Beekes man the 28 of May 1569 ffor vj chohes heades, jd "

And again, between 1586 and 1587, we have—

"Item, paied to Richard Higges for stoppage choughes out of the church iij d "

Now as the Jackdaw, as readers of '*Ingoldsby*' will remember, is "a great frequenter of the church," and commonly builds in church towers, while the red-legged Chough is never found in such a situation, there cannot be a doubt as to what species of bird was referred to by the Shropshire churchwardens in the 16th century.

O'Flaherty, describing the birds to be met with in "West or H'Iar Connaught" in 1684, clearly distinguishes the Jackdaw from the red-legged bird, though he calls them both "choughs." He observes (p. 13):—

"I omit other ordinary fowl and birds, as bernacles, wild geese, swans, cocks of the wood, woodcocks, *choughs*, rooks, *Cornish choughs with red legs and bills*," &c.

The name "chough" therefore was not exclusively applied to the red-legged species.

(2) The word "pate," synonymous with "head," occurs in Shakespeare's plays at least fourteen times; "pated" but once, and that in the passage now under discussion. It is not in the

least degree probable that Shakespeare in this place intended to convey a meaning wholly at variance with that indicated in every other passage in which the word "pate" has been used by him. Moreover, although I have read the plays of Shakespeare three times through, I have failed to discover a single instance in which the poet has used the word "patted" for "footed."

As regards the suggestion that this use of the word is supported by the French heraldic expression *croix pattée*, it is not to be denied that here the word *pattée* (from *patte*, a paw or foot) does imply a cross with a foot, in other words a cross the arms of which are narrow at the inner and broad at the outer end, as in the familiar "Maltese Cross." But it does not follow from this that the English word "pated," with one t as Shakespeare wrote it (as in "grey-pated," "addle-pated," &c.), means anything but "headed."

(3) To prove that "russet" is not necessarily "red," although it has been applied by some to objects which may have a reddish tinge (as, for example, russet leaves in autumn), it will be instructive to examine a few illustrations of the use of this word by poets and prose writers of repute, in order to discover in what sense they have employed it.

Skinner, in his 'Etymologicon Linguae Anglicanae,' 1671, has "RUSSET, ravus, a Fr. *rousset*, rous. It. *rossetto*, rutilus, rufus, hoc a rosse quod Italis rubrum signat tanquam sub-ruber."

It is natural, therefore, to connect the word "russet" with some subdued shade of red. But whatever may have been its original signification, it has by long custom come to be applied to shades of colour in which no trace of red is to be found; and this not with a few authors of a particular age, but with many poets and prose writers of different periods. From what follows it would appear that many probably derived their sense of the colour termed "russet" from the material which was formerly known as "russet" or "russetting," and which, as will presently be shown, was gray.

Bishop Mant, in the following lines, has employed the term "russet" as if it were synonymous with some pale shade of brown:—

"Before the scythe's wide-sweeping sway
The *russet* meadows tall array
Falls, and the bristly surface straws
With the *brown* swathe's successive rows."

Gisborne, in his 'Walks in a Forest,' employs the word *russet* to describe the colour of dead fern :—

"With faded leaves bestrewn and floating wings
Of *russet* fern o'ershadow'd whence upstarts
The woodcock."

Somerville, describing a Hare in her form, wrote :—

"Ah! there she lies! how close, she pants, she doubts
If now she lives; she trembles as she sits,
With horror seized! The wither'd grass that clings
Around her head of the same *russet* hue
Almost deceived my sight . . ."

The Chase, Bk. ii. 137—141.

The colour of a plain in autumn, imparted by an expanse of withered grass, is described by Somerville, in his 'Field Sports,' in the line—

"The Swallow skims the *russet* plain."

Pope also conceived that the word *russet* well described the colour of an open plain :—

"Here in full light the *russet* plains extend,
There wrapt in clouds the bluish hills ascend."

Windsor Forest.

Sir Walter Scott again, when describing the colour of a bare hill side, wrote :—

"Away hath pass'd the heather bell
That bloom'd so rich on Needpath Fell,
Sallow his brow and *russet* bare
Are now the sister heights of Yair."

Marmion, Intro., p. 4.

Elsewhere he writes :—

"And wither'd heath and rushes dry
Supplied a *russet* canopy."

Lady of the Lake, Canto I., p. 32.

At the present time, when naturalists are commemorating the centenary anniversary of his death, it is opportune to enquire what was Gilbert White's idea of the colour termed "*russet*." Fortunately for our present purpose, he has enlightened us on this point :—

"Romantic spot! from whence in prospect lies
Whate'er of landscape charms our feasting eyes,
The pointed spire, the hall, the pasture plain,
The *russet* fallow or the golden grain."

Invitation to Selborne.

Now it must be admitted that the colour of a fallow will vary in different localities, according to the nature of the soil that is upturned by the plough. In some parts of the country an admixture of yellow clay imparts a decided tinge of that colour; in the West of England the fallows are almost as red as a burnt brick. But in Hampshire and Sussex, where Gilbert White spent his life, the admixture of chalk in the soil makes the general aspect of the fallows grey or greyish white; certainly not red, or any shade of red.

Milton has expressly referred to gray fallows, while in the same line the term russet is used to describe the colour of withered grass upon a sheep-walk:—

“Streit mine eye hath caught new pleasures,
 Whilst the lantskip round it measures
Russet lawns and fallows *gray*,
 Where the nibbling flocks do stray.”

L'Allegro.

Gilbert White has also used the term “russet” in another of his poems to describe the colour of the grey smock-frock still, as in his day, commonly worn by the Hampshire shepherds:—

“Protective stalks the cur with bristling back,
 To guard the scanty scrip and *russet* frock.”

A Harvest Scene.

Dr. Johnson remarked that Sir Isaac Newton “seems to use this word (russet) for gray,” though I have not been able to find the particular passage referred to.

Turberville, however, employs the word in the sense of mouse-gray when describing deer-horns in the velvet-stage:—

“His heade when it cometh first out hath a russet pyle upon it, the which is called velvet.”—*The Booke of Hunting*, 1575, p. 242.

Both Halliwell, in his ‘Dictionary of Archaic and Provincial Words,’ and Wright, in his ‘Dictionary of Obsolete and Provincial English,’ describe “russetting” as “cloth of a dingy brown colour,” and the former defines “gray russet” as coarse cloth of a dull gray colour. See also Forby, ii. 141.

The use of the word cloth implies that it was made of wool, but it appears rather to have been made of cotton. In the ‘Household Book of the Duke of Norfolk, 1481—1490,’ printed for the Roxburgh Club, is the entry (p. 320):—

"Item, the xxiiij daye of Novembre my lorde paied to Larken, to by him a gown of coton russet . . ."

Again, in the 'Privy Purse Expenses of Elizabeth of York,' queen of Henry VII., is the entry (p. 104):—

"March 1503. Itm. payed to Cristofe Ascue for v yerdes of cotton russet of him bought by Nicholas Sadler for the Quene's choare at vjd the yerd. ijs vjd."

And in the 'Household Book of Lord William Howard' (p. 291):—

"1633 Nov 9. For one yearde of russett Jean's fustian."

That the material known as "russet" and "russetting" was of a gray colour may be inferred from many illustrations of the use of the word.

Skelton, in his satire upon the Alewife of Leatherhead, Eleanor Rummynge, describes her as—

"Footed like a plane,
Legged like a crane,
In her furred flocket
And *gray russet* rocket,
Her hood of Lincoln green,
It had been hers I ween
More than forty year."

Thus Sir Walter Scott, in the ballad of 'Alice Brand':—

"If fall and vair no more I wear,
Nor thou the crimson sheen,
As warm we'll say is the *russet gray*
As gay the forest green."

Lady of the Lake, Canto iv., stz. 12.

This was the ordinary clothing material at one time amongst the English peasantry:—

"And for the better credit of the world,
In their fresh russets everyone doth go."

DRAYTON, *Eclogue ix*.

Shenstone, in one of his poems, written in 1714, in imitation of Spenser, has:—

"A russet stole was o'er her shoulders thrown,
A russet kirtle fenced the nipping air,
'Twas simple russet, but it was her own."

The Schoolmistress.

And Rogers has introduced it with good effect in one of his most charming poems:—

"Mine be a cot beside the hill;
A bee-hive's hum shall soothe my ear;
A willow brook that turns a mill
With many a fall shall linger near.
* * * * *
Around my ivied porch shall spring
Each fragrant flower that drinks the dew,
And Lucy at her wheel shall sing
In russet gown and apron blue."

A Wish.

In 1653 our forefathers sang:—

"Our clothing is good sheepskin,
Gray russet for our wives;
'Tis warmth and not gay clothing
That doth prolong our lives."

Corydon's Song, in WALTON'S 'Angler.'

And here, as in the following quotation from Percy's 'Reliques,' it is evident that "russet" is the material, and "gray" the colour of it:—

"Then Bessy that was of bewtye soe bright,
All cladd in gray russett."

The Beggar's Daughter of Bednall Green, I., 13, 14.

It was also employed as good wearing material for a soldier's doublet. Sir Walter Scott recognised this fact when he wrote:—

"His skin was fair, his ringlets gold,
His bosom, when he sighed,
The russet doublet's rugged fold
Could scarce repel its pride."

Marmion, Canto I., p. 37.

Five-and-twenty years ago this same material, gray russet, or something very like it, was affected by sportsmen in the South of England when partridge-shooting in September. Struck with its

lightness and durability, I well remember about that time ordering, from a tailor at Chichester, a shooting coat of this material, which was only discarded when it became too small for the wearer. Modern tweed suits have since put this stuff out of fashion, but it must have found favour with sportsmen for many years, since it was in vogue in Byron's day:—

"The corn is cut, the manor full of game:
The pointer ranges, and the sportsman beats
In russet jacket."

Don Juan, Canto xii.

But in regard to the sense of colour in which russet has been used, enough has here been adduced by way of illustration to show that, while it was sometimes used to denote some reddish shade of brown, as the colour of a hare, dead fern, heather, or withered grass, it was often employed to mean gray. Now as everyone knows, or should know, the colour on the pate of a Jackdaw in the breeding season is gray; not unlike that of a new smock-frock as worn by the labourers of Hampshire whom Gilbert White has pictured in their "russet-frock"; while the head of the red-legged Chough is wholly black.

Venerable gray-headed councillors might be not inaptly termed "chough-headed," and Thomas Nash, a contemporary of Shakespeare, in his 'Apologie of Pierce Pennilesse' (1592), actually has the expression "chuff-headed burghomasters."

When we consider, then, that the name "Chough," which is onomatopæic, was formerly applied to the Jackdaw; that Shakespeare has frequently written "pate" for "head," but never "patted" for "footed," and that he is by no means singular in his use of the word "russet" for "gray," there appears to be sufficient justification for concluding that his "russet-pated Chough" is not the red-legged Cornish bird, but our old friend the gray-headed Jackdaw.

ORNITHOLOGICAL NOTES FROM OXFORDSHIRE.

BY O. V. APLIN.

THE transcription of the following notes for 1891 has been delayed by a journey to South America, whence I have but lately returned.

JANUARY.

5th. A Redwing was caught in a garden at Bodicote, too weak to fly. Redwings and Blackbirds have finished the holly-berries there. A Little Grebe was found alive on the snow under the windows of a house in that village, a long way from any water; it was very thin.

6th. Examined a Coot, in very poor condition, which was shot the previous day on one of the open "scours" in the Cherwell, at Franklin's Knob, Bodicote.

7th. Heard from Mr. W. C. Darbey, of Oxford, that he had received for preservation the previous day a Pink-footed Goose from Wood Eaton (see Feb. 6th), also "Kingfishers innumerable."

8th. Sky Larks by this date had entirely left Bloxham parish; they are generally abundant, on one farm especially. Examined, at Mr. W. Wyatt's shop, a Grey Crow, shot close to Banbury this week, and a female Pied Woodpecker from Boddington, Northants, caught alive. The fields are now covered with two or three inches of frozen snow, the worst possible state for birds. News from Mr. M. F. Melliar that he saw a Barred Woodpecker at North Aston on the 6th.

10th. A little flock of Ring Doves haunting a swede field at Bloxham. Found one Snipe in the warm ditch at Barford, which remained open through the frost, though the rapid Swere, close to it, was frozen. Intensely sharp frost; tracks of bird and beast most beautifully impressed on a sprinkling of dry powdery snow recently fallen on the crust. Saw about twenty Carrion Crows roosting in some trees near Barford; a few remained with us all the winter, and some generally frequent this roosting-place, but I never saw so many there before, and think they must have been migrants. Saw a Kestrel.

12th. Mr. Darbey wrote on the 11th:—"The poor Kingfishers seem now to be all killed, for I have not had one in for

several days, and I hear from people who frequent the water side that now they do not see one where a few weeks ago dozens could be seen." He had then nine Herons in his shop; Mr. Wyatt received two or three about the same time.

15th. Examined an adult Razorbill which had been shot at Wroxtton the day before, a long way inland.

17th. One Snipe in the warm ditch. A "charm" of half-a-dozen Goldfinches feeding on seeds of the alder at Bloxham.

18th. Heard to my surprise this afternoon the spring note of the Great Titmouse. The temperature did not rise above freezing point the whole day, and when we looked at a thermometer one yard from the ground in a sheltered place, shortly afterwards, the mercury stood at 28°.

19th. News from Mr. Darbey that he had received a Whooper, which was shot about the 10th inst (see Feb. 6th).

21st. A male Barred Woodpecker was brought to me from Banbury.

23rd. A Robin sang for the first time since the frost began at the end of November. News from Mr. M. F. Melliar that he saw the day before on the flood at Bertmoor, North Aston, fifteen Wild Swans.

24th. News from Mr. W. W. Fowler that he had observed a few Bramblings with Chaffinches in rick-yards near Oxford.

26th. Sky Lark singing; a few seem to have returned within the last few days.

30th. Bright, sunny, and very warm. I went to see the Wild Swans in the Cherwell Valley near North Aston, and found five in the large low-lying meadow known as Clifton Big Meadow; they were standing in shallow flood, feeding at intervals. Taking a considerable detour, we approached them along a bank of higher ground between the river and the flood, and got within 150 yards before they rose. As we had taken care to approach down wind, with the sun at our backs, the Swans had to come towards us on rising, and passed us in single file at about eighty yards distance or less, and only just topped the willows as they crossed the Cherwell, uttering their loud trumpet-like calls; they pitched on Bestmoor in deep water, where we left them when it was growing dark, their great white forms showing up on the water against the sunset glow. We saw a good many Mallards and Ducks, and heard at night the call of Teal and the "whew, whew" of one or two

Wigeon. Mr. A. H. Cocks records (Zool. 1891, p. 153) that two Smews (adult and young males), out of a bunch of four, were shot at Sunning, Oxon, about the middle of January, 1891.

31st. Mr. F. C. Aplin saw three Gulls flying over Bodicote in an easterly direction; wind about W.N.W.

FEBRUARY.

6th. Examined the following birds at Mr. Darbey's:—A Whooper, shot on the Upper Thames at Lechlade, Gloucestershire, on or about Jan. 10th, 1891, weighed 28 lbs. (see Jan. 19th). Pink-footed Goose, Water Eaton, adult; a tiny white patch at base of beak; bill very bright-coloured (see Jan. 7th), and a Sparrowhawk, a small and peculiarly warm-coloured female. Mr. Darbey said he had received many Bramblings during the winter of 1890-91. Mr. J. Baldwin Young, of Trinity College, told me of a Wild Swan (probably a Whooper) seen before the ice broke up, on the river about Iffly by a friend of his who knows these birds well from seeing them in Scotland. Observed in Christ Church meadow a flock of a score of Redpolls in some large alders. Mr. Fowler told me of a Barred Woodpecker he saw in the Broad Walk just before the very severe weather.

7th. Heard Chaffinches singing at Parson's Pleasure, but Mr. Fowler had heard them for some days previously. At Cornwell in the afternoon we saw one Coot on the ponds, and counted thirty or forty Moorhens.

10th. A Kittiwake was shot on the 3rd in Swalcliff Park, as reported in the 'Banbury Guardian.'

15th. Two Chaffinches in song here (Bloxham); in a long walk from Clattercote Reservoir yesterday Mr. J. B. Young and I did not hear one, and neither of us remembered seeing one; the scarcity of this bird since the frost has been remarkable. Obtained information about a large bird which came down stream, dead, and was found against the wheel-grating at North Aston Mill; it was seen on the 9th hanging on the mill-wall by a friend of mine, but was gone to-day. From description given, and a sketch of it made by the owner (who is a collector of birds in a small way), however, I have no doubt at all but that it was an adult Red-throated Diver in winter dress. Saw a Grey Wagtail in the pool below the mill; these birds (which were here in small numbers in the autumn of 1890) entirely disappeared during the severe frost.

On one of the lines of posts and rails crossing Bestmoor I saw a large hawk; it was a long way off and I had no glass, but the afternoon was very clear, and I could see the bird well: it seemed to be all grey (a companion who is not an ornithologist, but is a sportsman, independently remarked upon this), and I have no doubt it was a male Hen Harrier. Walking home along the canal, in the dusk, we saw a Short-eared Owl beating along the bank. Examined an adult Sheldrake, shot at North Aston Mill in the winter of 1889-90, and an adult Common Tern, shot at the same place in the *late* autumn (October or November, 1889).

16th. Some Chaffinches have apparently returned; several in song this morning, but hardly full yet.

17th. At a sale at Adderbury House I purchased an adult male Golden Oriole set up in a small old-fashioned box-case. I fancy it is the work of a birdstuffer named Goodway, formerly of Banbury, but now dead. As far as I can discover, no one now living can give the history of this bird, but I have little doubt that it was killed upon the estate. The only other stuffed birds in the house were a Kingfisher (in a similar small box-case, by the same hand), and some Partridges and Pheasants, all evidently set up many years ago.

22nd. A Grey Wagtail in the village brook for the first time since the frost.

MARCH.

2nd. My sister-in-law (who is acquainted with the appearance of the bird from two stuffed specimens in the house) saw two Great Grey Shrikes in a tall hedge at Bodicote. The observer, who described them as of a pearl-grey, with black on the wings, and a fan-shaped tail in flight, was first attracted by the small birds, which were mobbing the Shrikes. As soon as the first Shrike took flight and uttered a curious note, the small birds were silenced and made off.

6th. A few Peewits appeared on the arable lands where they breed.

11th. Examined a male Hawfinch, with the blue beak of summer, which flew against a window on the outskirts of Banbury, and was picked up stunned; it had remained stunned for an hour and looked rather "dazed" when I saw it; but I heard some time afterwards that it was alive and perfectly well.

12th. Mr. Wyatt had a male Brambling in the flesh, and, a

few days previously, a nice female Pied Woodpecker, both procured close to Banbury.

17th. An adult Kittiwake was killed near Banbury to-day; another was found dead in the Cherwell at Oxford on the same day, by Mr. F. W. Lambert ('Oxford Times'). Severe weather lately.

28th. A Grey Wagtail in the brook at Bloxham.

APRIL.

4th. A little flock of Meadow Pipits on some rough ground on the banks of the Swere at Barford; I saw two or three on an old cart-road called the Ridgeways here on the 29th March.

5th. Notwithstanding the wintry, snowy weather lasting up to the 2nd of this month, I found a Peewit's nest containing four eggs here, and from the action of the birds the eggs were probably incubated. This nest, which was in a very rough and rather foul piece of young wheat, was much more substantial than these nests generally are (perhaps on account of the inclement weather); it was a cup of squitch-grass, and roots, with walls nearly half-an-inch thick, standing up well above the ground.

7th. Saw a party of seven or eight Redpolls.

11th. Heard a Tree Sparrow singing. I never heard one before; it was a chant rather than a song—merely a string of more or less harsh notes in no particular order, and jerked out in a disjointed way. The notes were "chit wit weet weet chit wit chur." I heard the Tree Creeper singing on the 28th February and the 12th April.

14th. A friend living at Milcombe told me that five years ago they began to kill the Magpies by shooting them in the hedges at night, and since then they have killed on an average fifty every winter. In 1889-90 they got sixty-five. In the past winter only twenty were killed, as the snow on the ground made it difficult to approach the birds. Notwithstanding this he noticed four nests in sight at once a day or two ago. I recently counted five nests in sight at once on the Barford side of Bloxham.

18th. Young Rooks were calling from the nests.

26th. Heard in the lower part of Milcombe Gorse the note of a bird which I did not know—"chit-e-chee, chit-e-chee"—and traced it to a slender dark-coloured bird sitting in the top of a thorn rising out of thick gorse. It was a Dartford Warbler,

a bird I have looked for for years in this district, and always expected to find on Todmorton Heath, which almost joins this gorse; but the latter is much warmer and more sheltered. I watched it for a few minutes, when it became alarmed and dropped like a stone into the gorse. The note I heard was no doubt that which is syllabled by Mr. Howard Saunders "pit-i-chou." My lettering, of course, merely records my impression of the note, and was pencilled down after hearing it repeated only some half-a-dozen times or so. The Grasshopper Warbler was singing in the gorse on my return at 7.30 p.m. I saw a male White Wagtail in the village brook.

27th. On the east of Bloxham village are rather high-lying arable fields, very open and divided by low hedges, with hardly any trees. This afternoon I was crossing a part of the largest of these which had been planted with barley. The barley had sprouted about an inch high; here I caught sight of a small flock of birds wheeling round low over the ground. They alighted again almost directly, and by walking round and round in an unconcerned manner I got within fifteen or twenty yards of them before they rose again. They were Dotterel, a bird I had never seen alive before. The "trip" comprised eighteen birds. Of these two were plain and very light-coloured; six were darker, but still quite dull, with no bright colours; the other ten were in full plumage, five or six of them being most brilliant birds. (See 'The Field,' 7th May, 1892.)

28th. The Tree Creeper is very common this spring. I have seen more individuals than in the last year or two altogether. Mr. F. C. Aplin saw one a few days ago busily searching the walls of an old brown stone house in Rodway, Warwickshire. I never happen to have heard of a Tree Creeper on a house-wall before, and it seems the more curious because there is an abundance of old timber about Rodway.

MAY.

3rd. News from Mr. Fowler at Oxford that he saw on April 29th, in Port Meadow, among a company of *Motacilla raii*, one which he "had little doubt was *M. flava*: dark head, and back darker than *M. raii*, and altogether different from the rest, including females." He could not get a long-enough or near-enough look to discover the white eye-stripe, as the river was crowded

with boats. The Blue-headed Wagtail is new to the Oxon list. As mentioned further on, I saw another in the same place on the 2nd Sept. following. Mr. Fowler also reports a male Pied Flycatcher catching flies from the iron rails by the Cherwell at the bottom of the Parks. Mr. Lambert reports, in the 'Oxford Times,' that he saw three Dunlins on Port Meadow on the 14th April.

5th. Visited Clattercote Reservoir, but found it very low and inhabited only by one pair of Crested Grebes, two pairs of Coots, and one Mallard. Went on to Wormleighton (Warwickshire), where I saw one pair of Grebes, three pairs of Coots (one nest contained six eggs), some Moorhens, and a pair of Teal. These last were flushed from a thick belt of bushes, brambles, willows, and rushes between a thick hedge and bank and the water. The cover was so thick that it is hardly to be wondered at that a search for the nest was unsuccessful; but I have no doubt that they were breeding; the spot was a most likely one, and the birds would not leave the water, pitching down again several times after a flight. Mr. Reeve told me that in Tor Wood, South Leigh, on the 2nd, he noticed two Nightingales singing, heard the Grasshopper Warbler, and saw a Nightjar.

7th. Saw at Mr. Wyatt's a male Hawfinch which flew in at a room window at Neithrop, Banbury, a few days before.

8th. News from Mr. Fowler, at Oxford, that he found a Wood Wren singing at Parson's Pleasure the day before, and also observed the Nightingale and Lesser Redpoll there.

15th. When Rook shooting at Bloxham Grove I saw a Hobby, which darted out of a spinney behind me and came over my head. It got up rather high in the air, and went down to the valley, being attacked twice on the way by a Rook, but the hawk with a turn of its wings just mounted above it, and took no more notice. Had news of the following birds from Mr. Lambert:—The Wryneck was heard at Godstow on 23rd April, on Open Brazenose on 1st May, and at Godstow on 7th May. He remarks that he never found the eggs of this bird, and that it is uncommon about Oxford. A Green Sandpiper seen by him on Port Meadow on the 25th April. Several Grasshopper Warblers observed on Open Brazenose on May 1st. A Hobby shot at Church Handborough on the 4th May. Two Wood Wrens seen at Wood Eaton on the 10th May. Two males and a female Red-backed Shrike observed at

Godstow and Binsey on the 12th May, and Lesser Redpolls were seen in Port Meadow as late as the 15th April.

17th. News from Mr. Arthur H. Macpherson that on visiting Oxford he had examined, at Mr. Darbey's, a male Pied Flycatcher, which was rescued by a gardener of St. John's College from a cat on the 25th April.

18th. The snow which fell all last night lay three or four inches deep early this morning. A very hard frost this night.

21st. Heard the song of the Grasshopper Warbler between Bloxham and Barford.

27th. Thirteenth consecutive day with rain, or snow, and cold winds.

28th. A Chiffchaff's nest with seven eggs, in Mr. F. C. Aplin's garden at Bodicote, was built on an ivy-topped wall; the nest was about two feet from the ground, on the bare stems of the ivy and a foundation of rubbish lodged there.

JUNE.

7th. When at Kingham with Mr. Fowler, we found nest of Grasshopper Warbler on outskirts of Oddington Ashes, just over the Gloucestershire boundary, containing three young birds and two addled eggs. We also heard a Nightingale near Churchill Heath Wood, and another in the wood, and saw a pair of Wood Wrens. Have had news of adult Night Heron shot on the Windrush at Burford on the 27th May; also of a Red-backed Shrike seen near Filkins, in that neighbourhood on May 22nd.

JULY.

6th. Heard the song of the Grasshopper Warbler close to a young plantation on the edge of the heath at Epwell.

11th. Examined a colony of Sand Martins in a pit of peculiarly fine white sand at a hill near Todmorton (a limestone hill capped with sand), and counted about 180 burrows, although the pit is only about twenty yards long by twelve wide and ten to fifteen deep. Saw two Kingfishers at the Fulling Mill, the first I have since the frost. News of a Curlew seen flying over low down near Bloxham on the 7th.

19th. The scarcity of Swallows and Martins, consequent on the severe weather in May, is now apparent.

30th. The 'Banbury Guardian' of this date contains an

announcement by Miss Dorothea J. G. Prater, of Farnborough, to the effect that she saw on the 25th a beautiful pair of Golden Orioles. The cock bird alighted on some railings close to the high road between Little and Great Bourton, then flew slowly over a cornfield, followed by his mate. From enquiries made for me by the Rev. H. Holbech, I am satisfied, by the description given, of the correctness of Miss Prater's identification, and that the birds were really Golden Orioles.

31st. Observed a pair of Red-backed Shrikes with young on the wing, near Banbury, close to the favourite haunt of this species, the brickyard on the Broughton road.

AUGUST.

8th. Observed about a dozen (migratory) Wheatears in a meadow at Barford. Swifts remained with us until a remarkably late date this year. Usually they depart by the middle of August, and although stray birds have been seen in the first half of September in some years, I have no note of any other season in which they were observed continuously up to so late a date as they were in 1891. For convenience, I have brought together my own observations of Swifts after their usual time this autumn:—Aug. 18th, Swifts round the church tower; 20th, Swifts in Banbury; 24th, a pair round the church; 26th, one; 27th, one between Bloxham and Banbury, and at least twelve circling round the church tower there; I also saw one go in under the eaves of a house. From this date to Sept. 2nd I was out of the county, but saw Swifts almost daily in Berkshire and Hampshire. Sept. 2nd, several, some screaming, at Oxford; 4th, four or five here. The weather at the end of August was cold, wet, and stormy.

SEPTEMBER.

2nd. Observed on the tow-path just above Oxford a Blue-headed Wagtail. It was over the moult, but its head had a decidedly grey tinge, as contrasted with the back, and was also darker; white eye-streak conspicuous. A rather strong wind was blowing, and I watched the bird for five minutes as it ran along the path (sometimes within three yards of me), catching flies and picking up insects in the shelter afforded by the hedge-bank and the long grass and plants on each side the path. It is noticeable that Mr. Fowler saw one near this place in the previous

May (*ut sup.*). Mr. Darbey told me he had received a Ring Plover from Port Meadow the day before, and that he usually receives one, or hears of one being seen, about this season. He had also had some Terns from the river, as usual. The Botanic Garden was very gay with autumnal flowers in the sunny afternoon, and full of birds. Willow Wrens and Robins in song, Chiffchaffs also (but song very faint), Flycatchers, Blackbirds, Thrushes, Starlings, Pied Wagtails, Chaffinches, &c.

5th. Wheatears sitting on a wire fence at Barford, side by side with Flycatchers.

6th. A Bodicote boy caught a young Cuckoo and brought it to Mr. F. C. Aplin; this is a late date.

7th. Observed at Bodicote what I have little doubt was a Ring Ouzel, but I could not get near it on account of its shyness. It flew from tree-top to tree-top, settling finally on a bare branch, where it remained jerking its wings; it looked long when flying.

25th. Flushed a Landrail from cut barley; this bird is not nearly so often seen after as before the middle of the month.

27th. Two Kestrels hawking about a grassy hill-side, about 6.30 or 6.45 p.m. (clear evening, sunset at 5.47). They often settled on the ground, and were doubtless taking the Dor-beetles which were about.

OCTOBER.

2nd. Examined a Shag, *Phalacrocorax cristatus*, shot the day before on the Cherwell, at North Arton Mill.

11th. A good many Swallows and Martins observed.

14th. A few of both. Destructive storm from S.S.E. and S.W., yesterday and to-day.

16th. A fairly large party of Swallows and Martins, chiefly the latter.

17th. Observed a charm of Goldfinches; between thirty and forty in number, two or three still wanting the red colour on the face. A good many Martins still lingering about.

18th. Information of two or three Gulls seen flying over in a south-westerly direction a few days ago.

21st. Purchased a Fork-tailed Petrel which was picked up under the telegraph-wires at Banbury the day before. A great visitation of these birds to the coasts of Ireland and the West of England recently. Three or four Martins.

24th. Observed a Lesser Redpoll at Wigginton.

26th. News of a Fieldfare seen yesterday, and of a Curlew heard flying over.

27th. Saw a small flock of Fieldfares.

31st. Observed in the valley just above Somerton a very large congregation of Lapwings—from two to three thousand I calculated. The great flat open meadows were covered with birds. Four or five Herons were sitting on the ground or walking about; also Crows, Starlings, Fieldfares, and Meadow Pipits. Also observed two Wigeon; and near Nell Bridge eight Wild Ducks and a bunch of fourteen Teal. Put up some Snipe, very wild, twelve of which gathered into a wisp and flew round for some time.

NOVEMBER.

1st. A friend told me he had shot a Grey Crow, at Wickham Mill, on the 30th ult. Also that he heard the note of a Quail, "*Twit-me-dick*," there this spring; and had lately heard waders calling as they flew over at night. He hears them occasionally in spring and autumn. In or about 1885 a Quail's nest was found at Wickham.

3rd. Examined a Brent Goose in the flesh, which was shot by the Cherwell, close to Banbury, the day before. Breast and belly lead-grey, clearly defined from the black of the upper breast.

7th. Observed a Pied Woodpecker in a line of oaks between here and Barford. The 'Oxford Times' contains a notice of Golden Plover and Tern, shot on Port Meadow on the 26th and 27th ult.

13th. Examined a Common Buzzard at Mr. Coombs' shop, in Chipping Norton, which was shot on Oct. 16th at Cornwell. Also a Short-eared Owl, in the flesh, from Chadlington. They are found on the stubbles at this season.

16th. Heard the unmistakable whistle of a Grey Plover as it flew high overhead between here and Banbury; the weather was very thick, grey, and cloudy, and I could not see the bird.

21st. Saw an old Swallow at the end of Broad Street, Oxford. Examined at Mr. Darbey's shop the following birds, of which I had heard previously:—Peregrine Falcon, adult male, caught at Islip in the top of a falling tree in one of the gales in the middle of October; Peregrine Falcon, young male, shot at Stanton Harcourt while in pursuit of a Pigeon, about the second week in November; Manx Shearwater, adult, found at Hazely in the first

few days of September; Slavonian Grebe, adult in winter dress, but showing traces of the horus, shot at Sandford a few days before I saw it; Little Owl, trapped in a rabbit-hole in a bank, near Thame, and sent to Mr. Darbey on Nov. 11th (this species is new to the county list); four Grey Phalaropes, apparently adults changing into winter dress, procured in the middle of October—one on Port Meadow, one at Handborough, the others close to Oxford; another, obtained on the Gloucestershire side of the county in the latter part of October, was taken to Mr. Coombs; and on the 7th of December Mr. Warde Fowler bought one in Oxford Market, making the sixth example which had come inland to Oxfordshire from the hosts of these birds which come to our southern and south-western shores during S.W. gales in the middle of October. This year saw the greatest immigration to Great Britain of Grey Phalaropes which has occurred since the notable invasion of 1866. Stock Doves are numerous and very tame in Oxford now.

23rd. Mr. Fowler and I saw either a Swallow or a Martin (probably the former) for a moment over Lincoln College Quadrangle. Both species have been observed almost continuously in Oxford up to this date. There were many Swallows, Mr. Fowler tells me, over Merton Meadow on the 12th. On reaching home, a supposed hybrid between a Blackbird and Thrush was brought to me (Zool., 1892, p. 145). The cold wet summer, and fairly wild, very wet autumn, probably accounts for the late stay Swallows and Martins made. But Gilbert White long ago observed that they habitually remained late at Oxford. The last Swallows I saw here (at Bloxham) were on the 16th October, and the last Martins (three or four) on the 21st.

26th. A Short-eared Owl was brought to Mr. Wyatt.

DECEMBER.

8th. At Clattercote Reservoir I saw a fine drake and duck Wigeon (the only ducks there),; and two Great Crested Grebes in full winter dress, though I think they were both young birds of the year, and one certainly was so. I never saw Crested Grebes on this water later than Nov. 18th in previous years.

19th. The ice on the floods would bear skaters, and the season was changed from this time. To show the absence of frost up to this date the following observations may be worth preserving:—Oct. 23rd. Scarlet runner beans still fit to eat;

plums still hanging on trees; apricots were still on the trees in the first half of the month. Dec. 3rd. In a garden at Bloxham were two strawberries nearly ripe, peas in full bloom, and raspberries in full leaf. Dec. 4. Two Bats on the wing in Banbury at 2 p.m. Dec. 5th. On this and previous morning a Chaffinch sang three or four notes of its song—most unusual. Dec. 16th. A small bunch of violets were gathered in the garden and two roses from the wall.

20th. Great flock of Larks on a clover lea.

28th. Purchased a Great Grey Shrike, shot near the Cemetery at Banbury on the 23rd (Zool. 1892, p. 112); also examined a female Pied Woodpecker and a male Barred Woodpecker, shot near Hanwell and Banbury respectively.

There were great floods in October, November, and December. The rainfall in December was 4.14, and 28.66 for the year.

NOTES AND QUERIES.

Transportation of Coral by the Gulf Stream.—On the 25th of July last, I was shown by Dr. Kissmeyer, the resident Danish physician, at Westmanshavn, Stromoe, Faroe Islands, a very remarkable example of sea-drift; namely, a large mass of Brain Coral, weighing about seventeen pounds, which was found attached to a beam of wood that floated into Westmanshavn harbour during the month of March, 1891. I consider the coral to be *Diploria cerebriformis* (Lam.), a well-known species of the tropical Atlantic, and abundant in the Carribean Sea. An interesting feature of the occurrence lies in the fact that the beam of wood must have remained sufficiently long in tropieal waters for the coral polypes to rear their calcareous structure on it, for the under part of the mass shows plainly the surface of attachment or adherence to the wood. How this large mass resisted the tossing and fretting of the ocean during its long voyage across the Atlantic is wonderful; but a more striking reflection is, that if the beam of wood had not come ashore on the Faroe Islands it might possibly have been floated on to the shores of Spitsbergen, and there sinking have become entombed in the glacial deposits which are now forming in the bays and fiords of the lands within the Polar area. Owing to the rapidity of elevation which all the land areas around the Pole appear to be undergoing, and which I have so frequently referred to in this Magazine, the observer of a few generations hence might have

found this mass of coral lying side by side with the boreal fauna of the Polar area.—H. W. FEILDEN (West House, Wells, Norfolk).

MAMMALIA.

The Vole Plague in Scotland.—The daily papers announce that the doubts expressed by the Vole Commission as to the efficacy of Professor Löffler's *bacillus typhi murium* in destroying the vole plague in Thessaly are, in part at least, confirmed by the experiments of Dr. Lüpke. This bacteriologist finds that it is potent only where weakly voles are concerned. The robust ones not only resisted its action, but were actually rendered immune by the inoculation they had undergone. A new specific has, however, been brought out by Herr Laser, of Königsberg, which, he affirms, is much more potent than the Löffler bacillus, and is, moreover, said to be quite innocuous to horses, guinea-pigs, pigeons, cats, and other domestic animals. We are enabled to add upon the best authority that in Scotland the voles have now almost entirely disappeared from the affected area, and that notwithstanding the fears of the farmers in certain districts that their pastures were ruined, there has not been such a crop of grass for years. So good, indeed, are the pastures, that large drafts of lambs have been for some time sent direct off the hill to the fat market, a most unusual event on such high farms. Doubtless the excellence of the pastures may be attributed by some to the favourable season; but it is a remarkable fact that the areas which were most affected by the voles have the best crops of grass, and the lambs are in better condition and are fetching higher prices than those from any other district.

Swimming Cats.—Apropos of Mr. Southwell's communication (p. 302), I may state that I have at various times had three cats at my fish-farm that have been not only good swimmers, but also good fishers. Everyone knows that cats are fond of fish, but it is generally supposed that they will not enter the water to catch them. I believe any cat brought up amongst fish-ponds, where fish are in the first instance occasionally easy to capture, will soon cease to be afraid of the water. I have seen a cat sit on the cover of a raceway where the water entered, and regularly take trout-fry with her paw. The act was performed with the greatest ease, the animal always securing a fish. I have seen the same cat sit crouching on the bank of a pond, and when a trout rose within a yard of her spring upon the fish. I never saw her succeed in catching one, but she would swim quietly across the pond and walk out at the other side. Another cat I had several times succeeded in catching trout of 1 lb. or so in the raceways. The common Brown Rat, *Mus decumanus*, also takes fish whenever he can get them, though I believe he is not often suspected.—J. J. ARMISTEAD (Solway Fishery, Dumfries).

Marten in Lincolnshire.—I saw about a fortnight ago, in the Angel Inn at Peterborough, a stuffed specimen of the Marten, which, as I was informed by the proprietor, was trapped four or five years ago near Sleaford. You may, perhaps, think this worth a note in 'The Zoologist.'—G. E. H. BARRETT-HAMILTON (Kilmanock, New Ross).

Food of the Squirrel.—Seeing Mr. Cordeaux's note (p. 301) respecting Squirrels taking fruit, I may remark that I have several times known them to take plums from my orchard. Close alongside I have a plantation of larch and Scotch firs in which Squirrels are common, and where they are unmolested, for I have given orders that none are to be killed. Practically I do not find them do much harm, and the few plums they occasionally take are hardly worth consideration. It is also quite easy, if desired, to frighten them away by lying in wait, or stalking them with a garden-syringe and some paraffin or tar-water.—J. J. ARMISTEAD (Solway Fishery, Dumfries).

Mice and Apricots.—Apropos of Mr. Cordeaux's note on Squirrels eating apricots, it may interest him and others to learn that in Nottinghamshire apricots have been attacked by mice. When visiting Bramcote Hall lately, a lady told me she had observed a mouse running down the branch of an apricot-tree to the earth. Wondering what the little creature could be doing, she examined the fruit, and found that many apricots had been nibbled. I suggested that probably the mice wanted to get at the kernel, but was informed that only the pulp of the fruit had been attacked. Some species of mouse (I believe the Short-tailed Field Vole) every year clears off the crop of filberts growing on an island in the Soar which is tenanted for sporting purposes by a relation. To gain access to the trees the mice must swim a deep arm of the river fully twenty yards across. So numerous were they a year or two ago, that a pair of Weasels reared their young on the island, probably preying entirely on the mice. The island and the surrounding meadows are liable to extensive floods.—F. B. WHITLOCK (Beeston, Notts).

[It would be of interest to ascertain for certain, by trapping, this species of mouse, or vole, referred to. So far as our experience goes, it is not the habit of *Arvicola agrestis* to climb, or to eat the kernels of nuts. We have never found anything but green food in the stomach of this species, but have several times found in the stomach of the Bank Vole a white mass resembling comminuted kernels of hazel-nut or acorn. If the Bank Vole is not to be found in the locality indicated, perhaps the culprit is the Long-tailed Field Mouse, *Mus sylvaticus*, which is not only an eater of kernels, but a good swimmer. But may not a good number of filberts be carried off by birds?—ED.]

Daubenton's Bat in Bedfordshire.—Whilst returning from a day's shooting on the River Ouse on August 9th, we neared a quiet part of the

stream at Cardington Mill; the water, sheltered by the mill in front of a plantation by the side, gave it a very secluded appearance. Bats skimming round and about our boat attracted my attention, and from their numbers I was able to keep them well under observation. Their slower flight, constantly near the surface of the water, reminded me of the habits of Daubenton's Bat, and upon shooting two of them, they proved to belong to this species.—J. S. ELLIOTT (Dixon's Green, Dudley).

BIRDS.

Preservation of the Kite in Wales.—In reply to Mr. J. H. Salter (p. 311), let me assure him that a great deal has been done during the past twenty years towards the preservation of this fine bird in at least one county in Wales, thanks to the care taken of them by several large land-owners. I do not give the name of the county, because I do not want a visit from the "gentleman egg-collector," who has already given me a great deal of trouble, and to whom it appears nothing deserving of protection is sacred.—E. CAMBRIDGE PHILLIPS (Brecon).

Golden Oriole in the Færoe Islands.—The veteran ornithologist of the Færoes, Herr H. C. Müller, informs me that a specimen of *Oriolus galbula* was shot near Wellestad, Island of Stromoe, during the latter part of May, 1893. This is the first example that has come to the notice of Herr Müller, or been recorded from Færoe.—H. W. FEILDEN.

Avocet in Nottinghamshire.—An immature male of this rare bird was picked up, on July 9th, on the mud-bank of the river Trent below Newark, with wing and leg injured as if from a shot. It is the first specimen I have met with in fifty years' collecting.—A. C. ELLIOTT (Newark-upon-Trent).

[A bird whose habits lead it to prefer marshes and muddy shores is not likely to be often met with in a county like Nottingham. Nevertheless Messrs. Sterland and Whitaker, in their list of county birds, mention four instances of its occurrence between the years 1800 and 1856.—ED.]

BATRACHIA.

Rana agilis in the Channel Islands.—Among some reptiles which I have been naming for Mr. Linnæus Greening, of the Warrington Museum, I found a specimen of *Rana agilis*, labelled "Jersey." Mr. Greening informs me that he received several live specimens of this frog, in 1888, from Mr. E. Spencer, who obtained them about a mile from St. Peter's, Jersey. I have found it common, though local, on the north coast of Brittany; there is therefore nothing very surprising in its occurrence in Jersey, which is nevertheless, at present, the northernmost point whence it is recorded in Western Europe. The specimen mentioned has been presented by Mr. L. Greening to the British Museum.—G. A. BOULENGER.

MOLLUSCA.

The Method of feeding in *Testacella*.—Owing to the fact that the proofs of my paper in 'The Zoologist' for August, when received by me, were paged, I was unable to give to two fellow-countrymen the credit due to their observations on *Testacella*. Thomas Blair (Mag. Nat. Hist. vol. vi. 1833, p. 43) found by experiment that the worm was usually seized by the end, but records a case where one was caught by the middle, observing at the same time that the difficulties he saw in the way of its being swallowed were not overcome in this instance. Some further remarks are made by a writer signing himself "J. D." (query, John Dovaston), and again, in the following year, the latter writer, in describing the habits of some of the slugs sent to him by Mr. Blair (Mag. Nat. Hist. vol. vii. 1834, p. 224), mentions that a specimen protruded a white organ against his hand when holding it. I ought also to take this opportunity of calling attention to a paper by Mr. W. E. Collinge, dealing with the generative system in the genus *Testacella* (Annals & Mag. Nat. Hist. vol. xii. July, 1893, p. 21), which bears out my remarks on the specific distinctness of *T. scutellum*.—WILFRED MARK WEBB (Holmesdale, Brentwood).

NOTICES OF NEW BOOKS.

Fur-bearing Animals in Nature and Commerce. By HENRY POLAND, F.Z.S. 8vo, pp. i—lxv; 1—392. London: Gurney and Jackson.

LONDON is the great market for furs and skins of the world, and not St. Petersburg or Nijni-Novgorod, or any of the great cities of Northern or Western Europe or Canada, as many imagine; and to our metropolis come the fur-merchants of every part of Europe, Asia, and America.

Mr. Poland, as a leading London furrier, may be assumed to have the statistics of the trade at his fingers' ends, and, so far as concerns an enumeration of the various species of animals whose skins have a commercial value, the numbers annually imported, and their comparative prices, he may be deemed to write authoritatively; but when, in addition to these statistics, he attempts to give some information on the natural history of these animals, he very soon gets out of his depth, and shows that an author may be a "Fellow of the Zoological Society" and yet know very little about Zoology. It is clear, from his remarks,

that he knows nothing from personal observation of the habits of the animals he writes about, nor has he sufficient acquaintance with the literature of his subject to enable him to quote the most reliable authorities. This is to be regretted ; for the subject is a good one, and if properly treated might have resulted in the production of a very useful book. As it is, its utility is confined to that portion of it which deals with what may be termed trade statistics, while the natural history portion of it must be regarded as not only inaccurate in details, but incomplete when compared with the abundant materials which—though unknown to the author—are available for such a compilation.

Not many years ago Dr. Elliott Coues published a volume entitled "Fur-bearing Animals," in which he gave an excellent account of the Wolverine, the Martens or Sables, the Ermine, the Mink and various other kinds of Weasels indigenous to North America, besides several species of Skunks, the Badger, the land and sea Otters, and numerous exotic allies of these animals; yet we do not find this authoritative work anywhere quoted by Mr. Poland. Nor does he appear to be acquainted with Caton's 'Antelope and Deer of America' (a second edition of which appeared in 1881), or with Allen's splendid monograph on the "American Bisons, Living and Extinct," with 12 plates and a Map, published in the 'Memoirs of the Museum of Comparative Zoology at Harvard College.' These, and other volumes we could name, would at all events have furnished Mr. Poland with reliable information on the American species noticed in his book. In regard to the Bison, now on the verge of extinction, it was to be expected that he would have referred to the latest published statistics concerning its present limited distribution; but this unfortunately he has not done.

We shall not attempt to correct all the mistakes we have noted, but reference should be made to a few at least, in order to justify our criticism.

"The Wild Cat," says Mr. Poland (p. 35), "is indigenous to Great Britain; it is by no means rare in Sutherlandshire, Ross-shire, Inverness-shire, parts of Perthshire, and South Caithness." So far so good, though he might have added Argyllshire; but he goes on to state, "It is also found in North Wales, and some of the northern counties of England," adding that "it is very rare in Lincolnshire." The authority for this information is not

given, and, as most readers of 'The Zoologist' will know, it would be very difficult to find.

"The Manx Cat," we are told (p. 42), is tailless, and resembles the Lynx in this respect;" but Mr. Poland surely cannot suppose that Lynxes have no tails, though they are certainly shorter than those of the typical *Felidæ*.

The statement that the Beech Marten, which he calls *Mustela foina*, "is found in Scotland, Ireland, perhaps in North Wales, and is probably extinct in England," shows that, for Mr. Poland, English zoologists for the last ten or a dozen years have written in vain, otherwise he would be aware of the general acceptance of the late Mr. Alston's view (Proc. Zool. Soc. 1879, p. 468), that this species of Marten has nowhere been met with in the British Islands.*

The statement (p. 273) that "the Hare chews the cud, and like other Rodents is able to raise itself on its hind legs," betokens some confusion of ideas about Rodents and Ruminants; and the remark (p. 274) that "the Brown Hare has been known to cross with the Blue, or Varying, Hare of Scotland," would have been valuable had it been followed by some evidence in support of the statement. We wonder what sportsmen will think of the remark that "its habit of crouching at times on the ground is the reason of its being coursed with two Greyhounds." The account given of sport with the Rabbit (p. 280) is equally amusing and misleading.

The old story of the dark-coloured variety of the Fallow-deer having been introduced by James I. from Norway, is once more repeated, in spite of its having been shown years ago to be altogether fallacious.† So difficult is it to eradicate a popular fallacy when once it has taken firm hold of the public mind.

But setting aside these and other blemishes, which catch the eye as one turns over the pages, there is a good deal of information of a kind that is curious, and to most readers will be probably novel.

It will doubtless surprise many to note the number and variety of the animals whose skins have a marketable value, although it should be observed that the length of the list as given in the

* See 'The Zoologist,' 1879, p. 441; 1891, p. 401.

† 'Transactions of the Essex Naturalists' Field Club,' 1880; and 'Essays on Sport and Natural History,' 1883.

"Contents" is misleading, inasmuch as the same species appears under several different names, according to the country from which it comes. Thus we find the Tiger, the Bengal Tiger, the Mongolian or Chinese Tiger, and the Turkestan Tiger treated as so many distinct forms of *Felis tigris*. Similarly there are Chinese, East Indian, Persian, and African Leopards, exclusive of the Cheetah and of the Snow Leopard, or Ounce, which, according to Mr. Poland, is "not so rare an animal as many suppose; a certain number (average not stated) are imported into Russia, through Siberia, annually. The price of a good skin is from 40s. to 130s.; and 140s. is the highest price paid." Wolves also, Foxes, Bears, and Otters appear from the "Contents" to be more numerous in point of species than they really are, in consequence of being classified topographically. In this way the Fur-seals with a dozen different names are reducible to four species.

The immense number of fur-skins imported, says Mr. Poland, will perhaps astonish many readers, the more so as the importation of some of them is increasing instead of decreasing. Certain species, especially those of large size, are steadily decreasing, but others—as the Racoon, American and Australian Opossums—increase with the settlement of the country, feeding on the cultivated fields, and thus procuring food more readily than when the land was unreclaimed. Another cause for the increase in the quantity of skins imported is the improved facilities for transport by rail and steamer. It is instructive to compare the returns of some of the American furs imported in 1891 with those of 1881.

Furs imported from the United States and Canada.

	1881.	1891.
Beaver	58,241	11,693
Bear... ..	8,364	12,795
Otter	9,019	7,334
Fisher	4,738	2,955
Marten	36,172	38,412
Wolf... ..	2,248	10,000
Wolverine	597	738
Lynx	7,374	6,496
Fox	99,363	106,755
Mink	170,620	173,389
Racoon	632,270	549,180

It is probable, although Mr. Poland does not mention it, that another reason for the increased number of skins, of such predatory animals as the Wolf, Wolverine, Lynx, and Fox, is the Government reward offered for their destruction. As regards the skins of Fur-seals received from America in 1881 (according to Mr. Poland's tables), the number was 210,745, and in 1891 (the last year for which the returns are tabulated) 725,731, a very considerable reduction.

Fashion, it would seem, exercises a great influence upon the prices of furs:—

"Skins that for some years have been neglected and almost unsaleable, owing to the vagaries of fashion, suddenly assume a high value, an advance of 50 or 100 per cent. in these days of quick communication and transit not being thought much of, although a rise of 30 or 40 per cent. was considered sufficient a few years ago. Any fashion, if constantly kept up, would probably lead to the extinction of many species, but its frequent changes give the animals time to increase. The Hudson's Bay Company have a good plan of passing over for a time any district that is exhausted.

"The furs of a country are, as a rule, only used to a minor extent there, a great number being exported, and, on the other hand, many foreign ones are imported, the want of one country being supplied by the abundance of another, thus stimulating and promoting commerce."

In addition to the English names of the fur-bearing animals, which in most cases are followed by their scientific appellations, although some are not specifically identified (see pp. 145, 155, 171, 199, 304, 367—369), Mr. Poland gives the French and German names, where known, and text cuts are furnished of sixteen species. Considering the large number of species to select from, it would have been better to have dispensed with such very familiar illustrations as those of the Polar Bear, American Bison, and Kangaroo, and to have substituted figures of some less known animals. Wearers of furs, probably, would have preferred to gain some idea of the general appearance of a Chinchilla, a Mink, and a Musquash, or view the portraits of a Nandine, a Paguma, and a Pernitsky.

